What's my sonde telling me and what's new?

TCEQ SWQM Worshshop

October 29, 2014

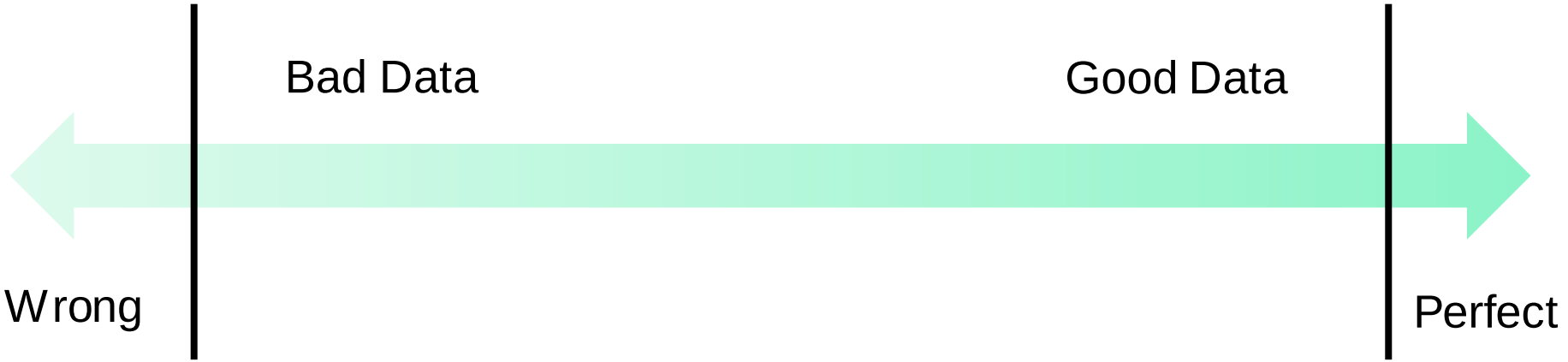
If sondes could talk…

Tell Me:

- ☑ There is a problem and it is “X”
- ☑ It’s time to calibrate the sensor
- ☑ Maintenance is due

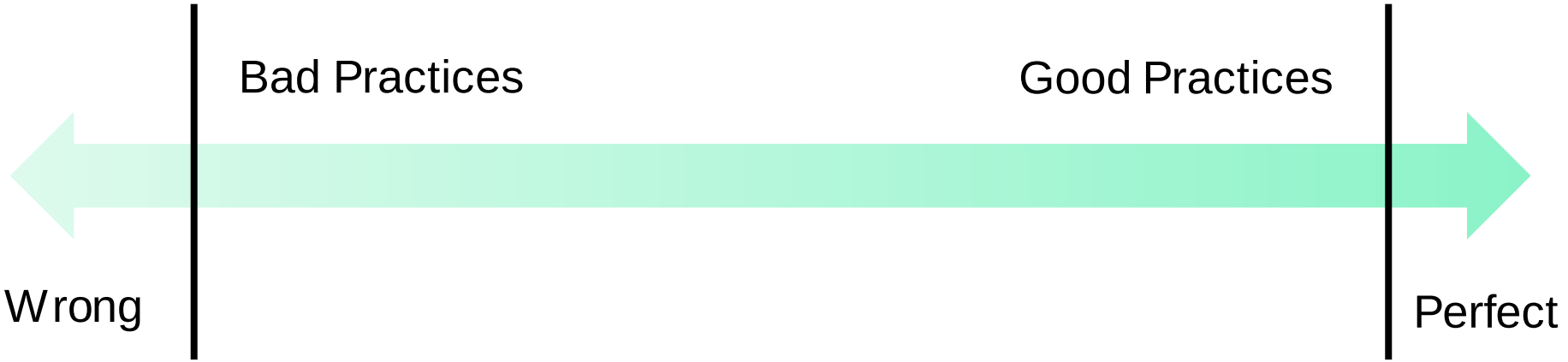
Ultimately: you can trust your data!

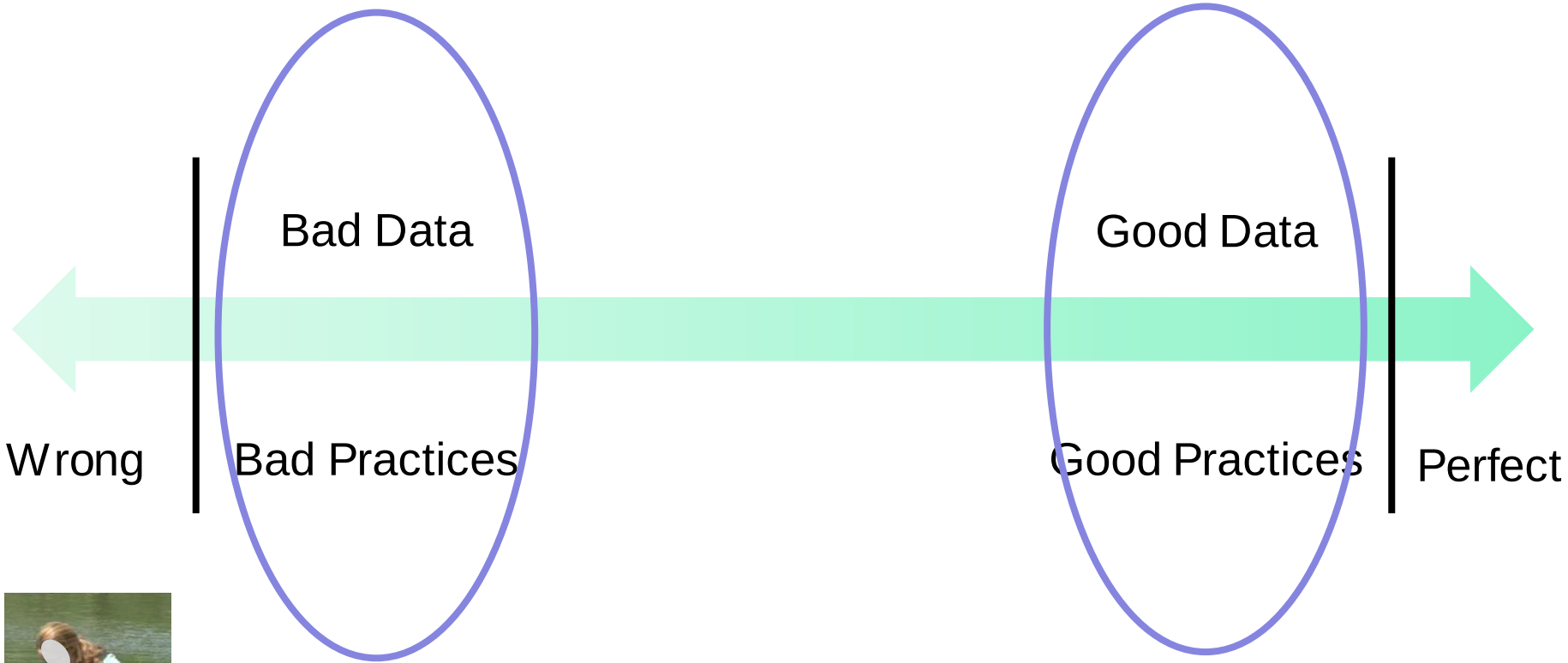
Good Data Continuum



There is uncertainty in (almost) every measurement

Best Practices Continuum



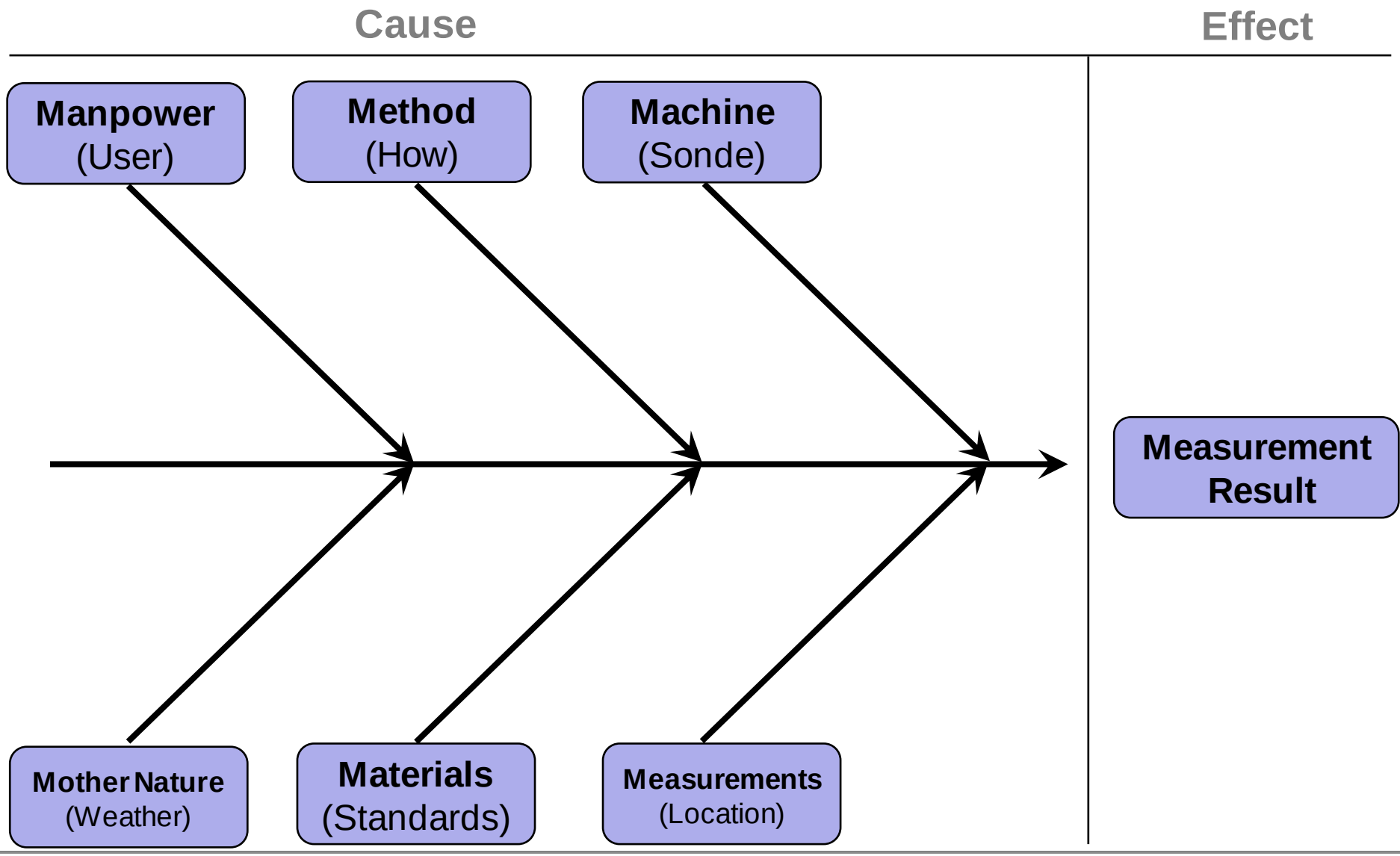


The “True Value” What is Real?

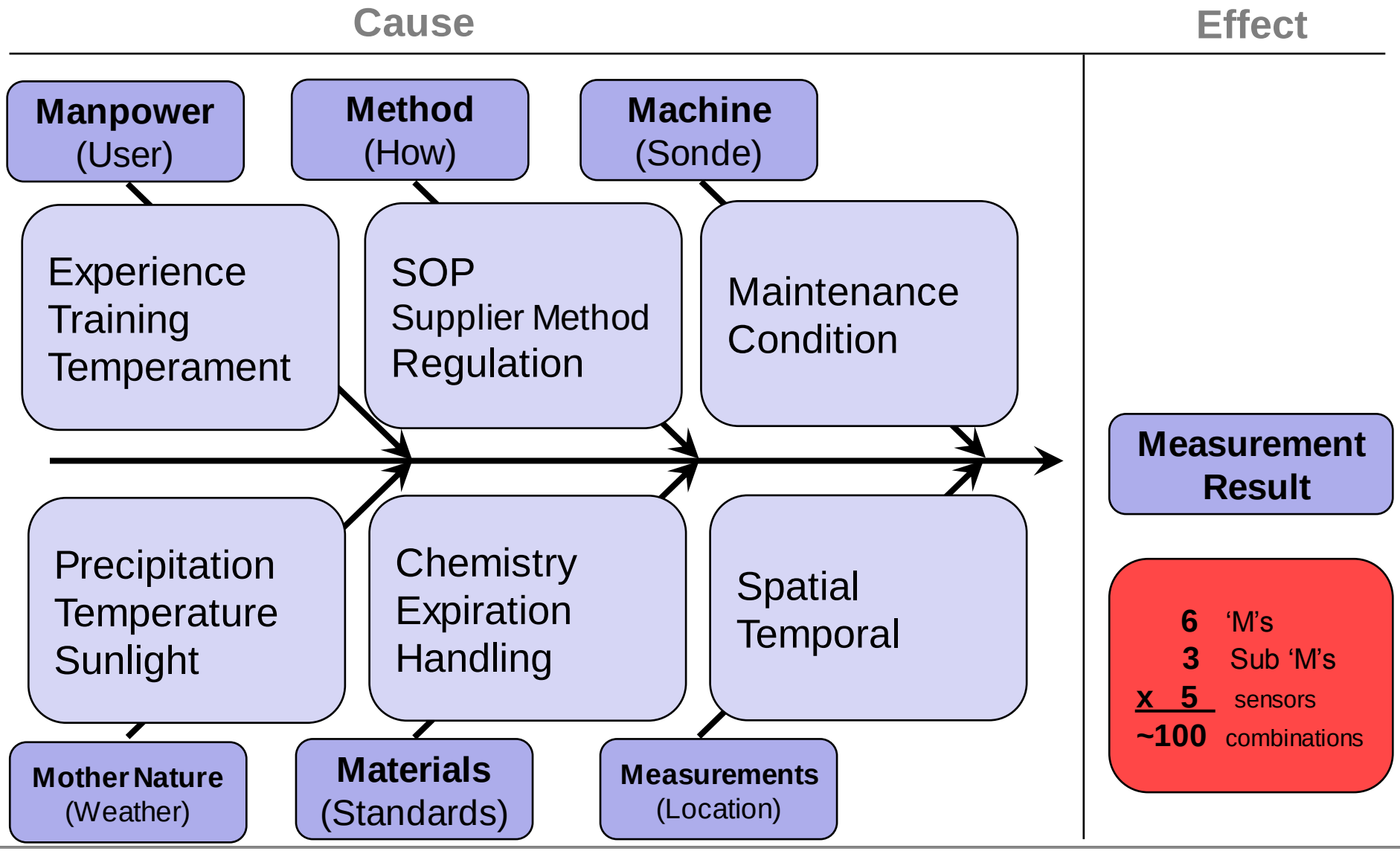
- Methods of determining true value:
  - grab samples that are evaluated using a trusted laboratory technique
  - instruments that are serviced and calibrated solely for quality control
  - calibration standards

- Compare measurement result to something you trust!

Variability: Identify and Minimize



Variability: Identify and Minimize



Temperature

- Most straight forward
- Thermistor
- Beware…

Sensor Dependencies

This sensor…	…is used with		
	Conductivity*	DO (% Sat)	pH
Temperature	x	x	x
Conductivity		x	

** Its derivatives*

Conductivity

- Cleanliness during calibration is critical
- Temperature compensation methods vary

Sensor Dependencies

This sensor…	…is used with		
	Conductivity*	DO (% Sat)	pH
Temperature	x	x	x
Conductivity		x	

** Its derivatives*

Dissolved Oxygen (LDO)

- Calibrate in air saturated water
- Use the right BP
- Change cap yearly

pH

- Two parts: measuring electrode and reference electrode
- Both degrade
- Rebuild reference as needed

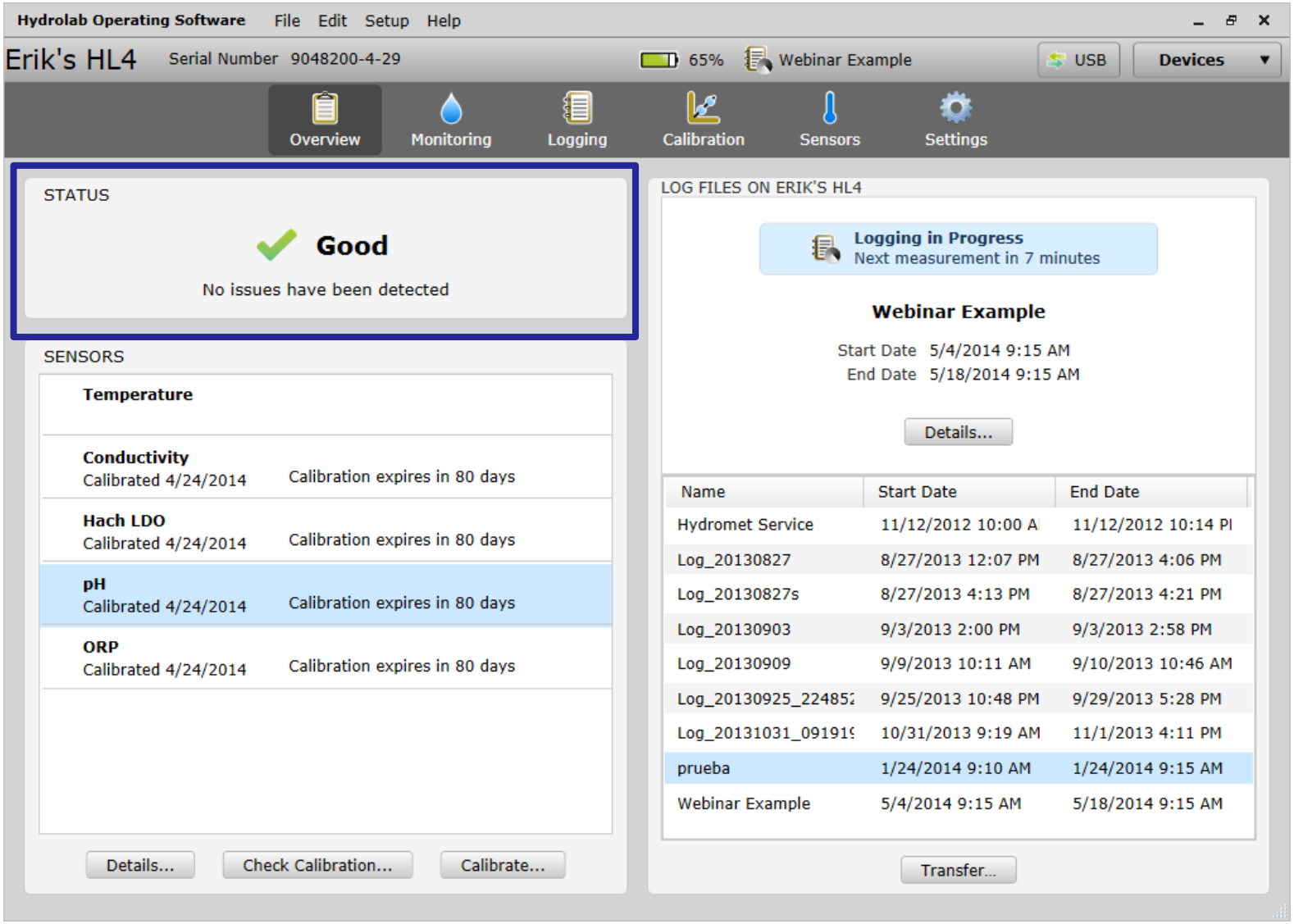
Turbidity

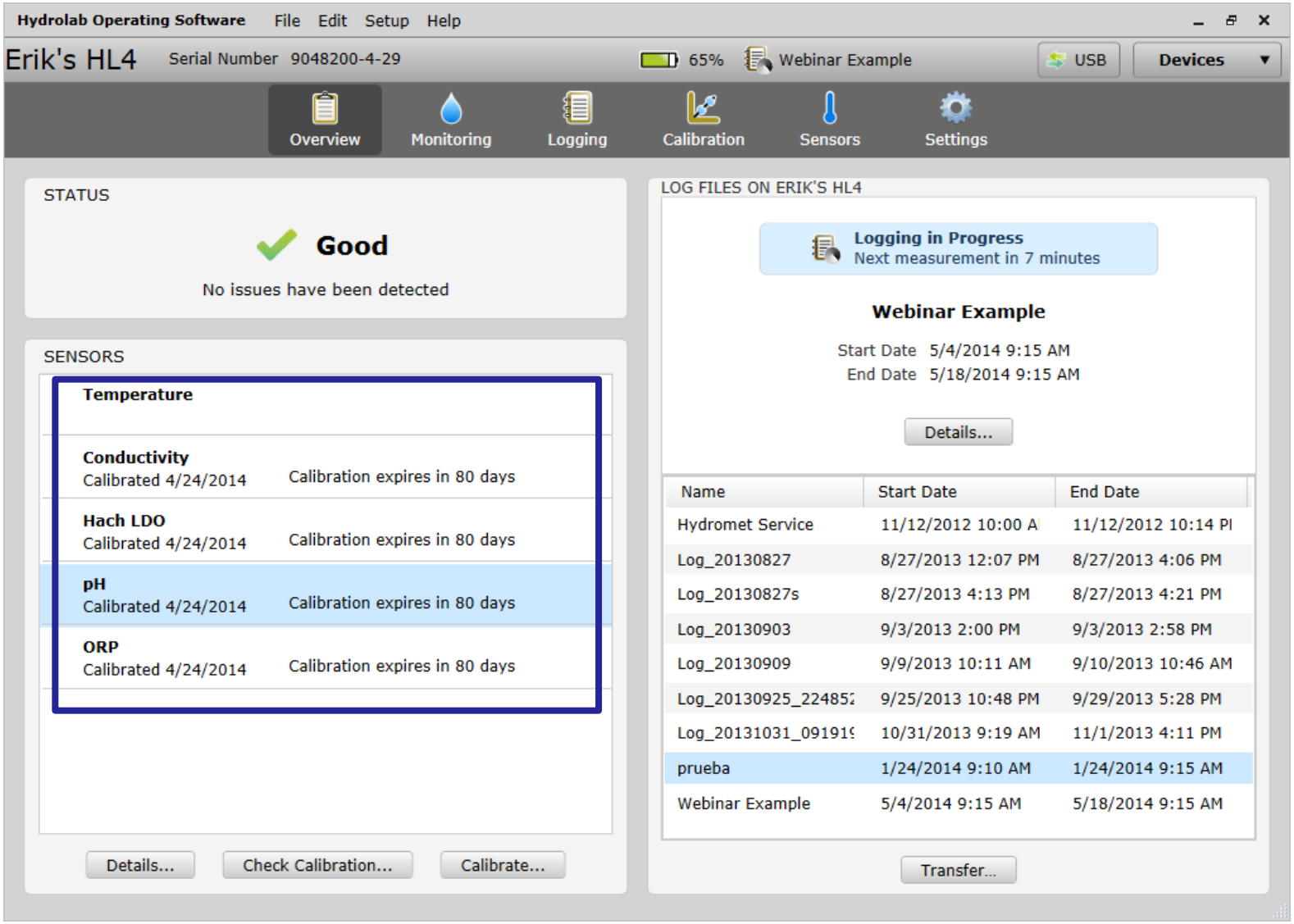
- Cleanliness during calibration is critical
- Use formazin or StablCal
- Change wiper blades

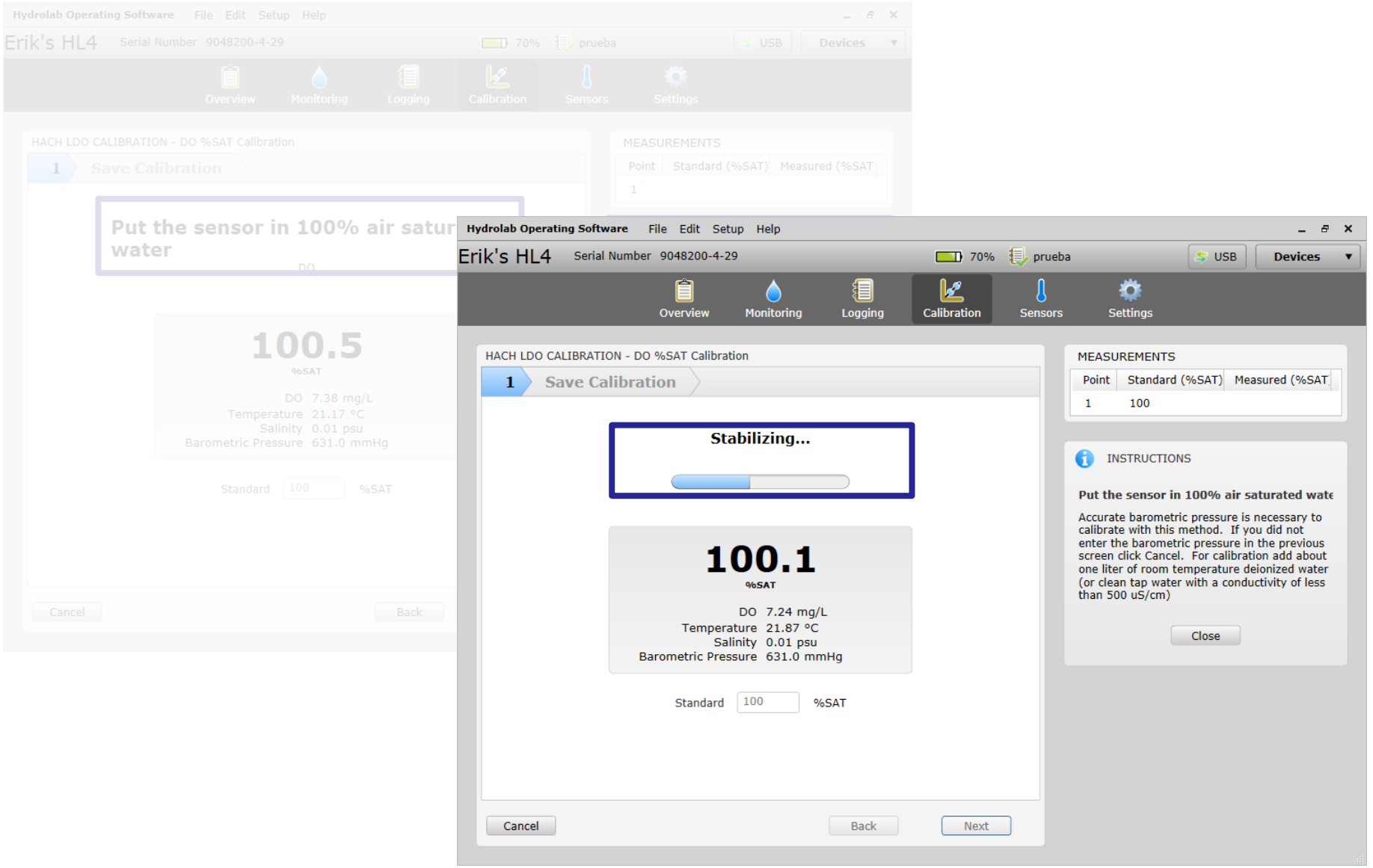
If sondes could talk…

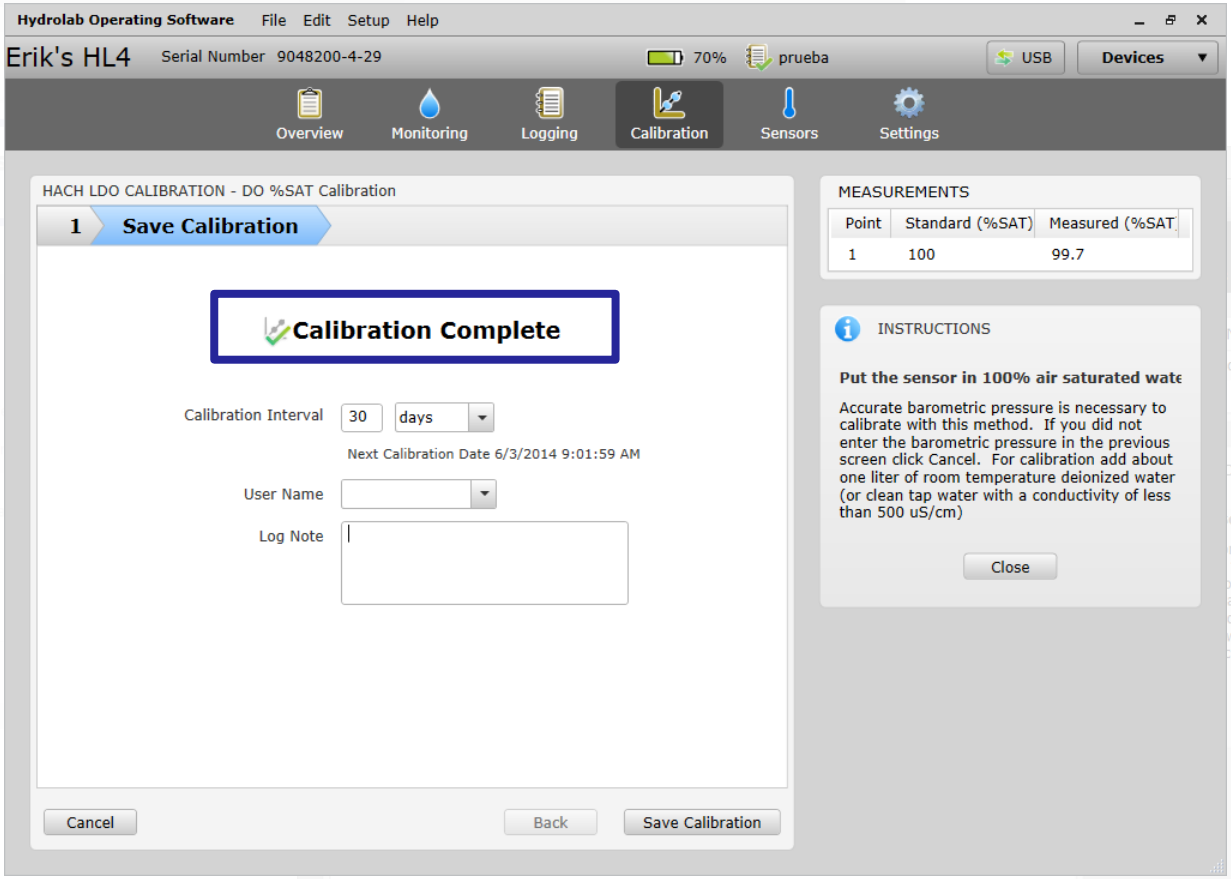
Data You Can Trust

- **Reliability**
- **Ease-of-Use**
- **Metadata**

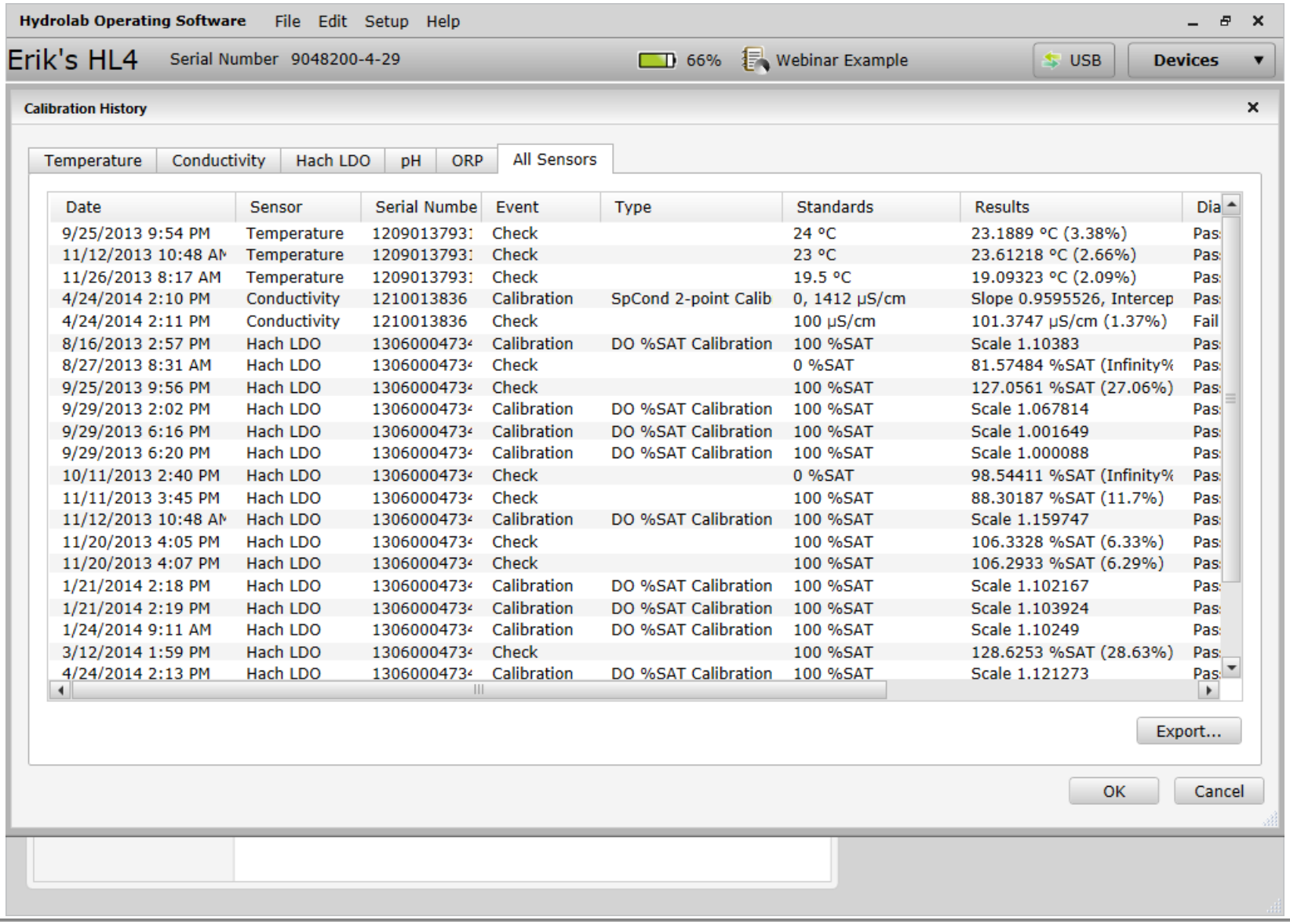








Calibration History

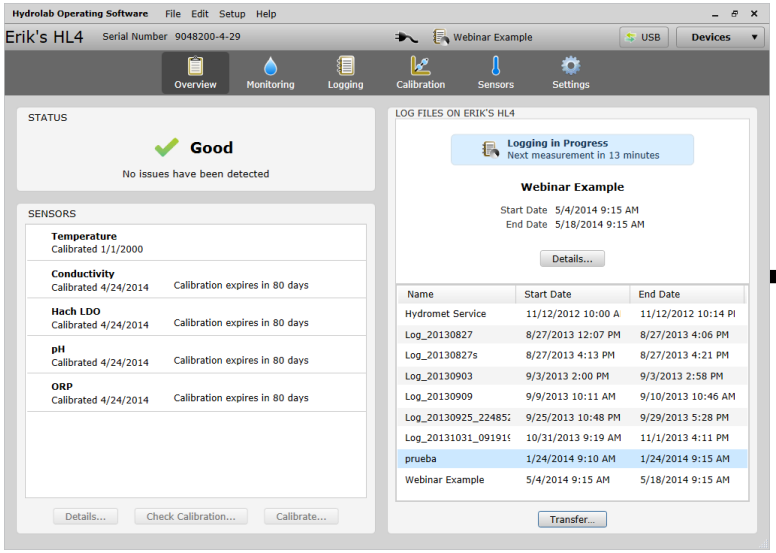


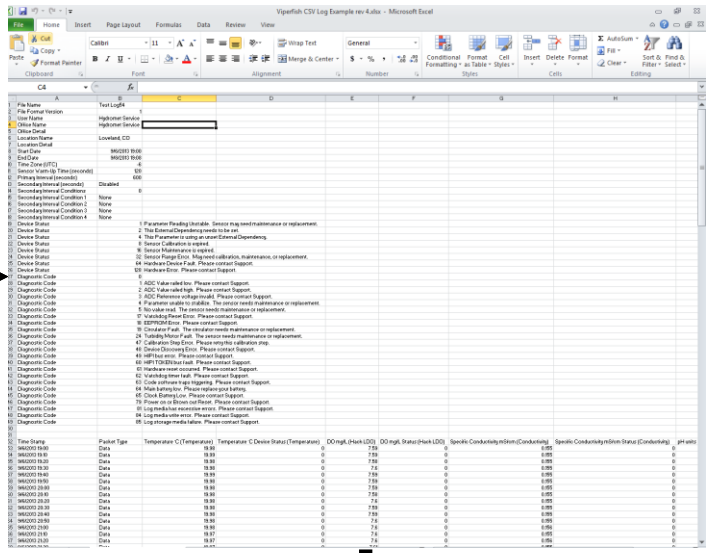
Metadata

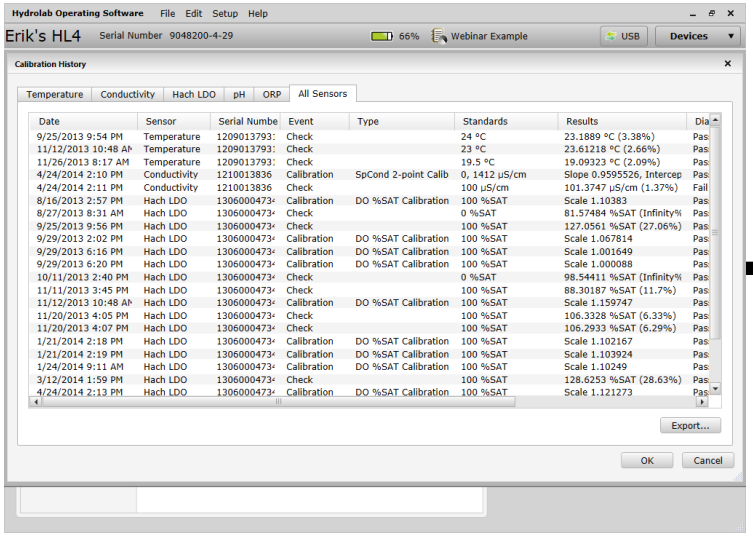
‘Data about the data’

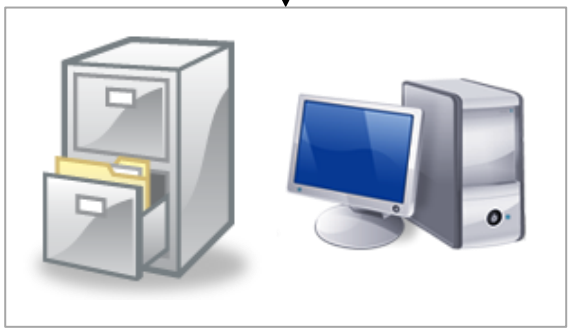
- ✓ Date/Time
- ✓ User
- ✓ Location
- ✓ Settings
- ✓ Status
- ✓ Calibration/maintenance expiration
- ✓ Serial number and date of manufacture

Metadata









Example of Log Files

The Hydrolab HL Series Tells Me:

- ☑ There is a problem and it is “X”
- ☑ Time to calibrate the sensor
- ☑ Maintenance is due
- ☑ What was done, when, by whom, and with what result

Ultimately: you can trust your data!

Thank You